ENVIRONMENTAL ASSESSMENT
FOR EXPANSION OF THE AVERY SAND AND GRAVEL PIT
Vancouver Allotments V-179 and V-179a

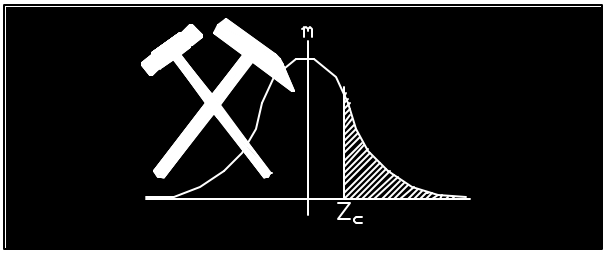
KLICKITAT COUNTY, WASHINGTON

December 21, 2000

Prepared for

Pacific Northwest Aggregates, Inc.
925 Fairgrounds Road
Goldendale, Washington 98620

Prepared by:



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EXECUTIVE SUMMARY

Halstead GeoNumerics was retained by Pacific Northwest Aggregates, Inc. to prepare an Environmental Assessment in correlation with the submitted mine plan *Mining and Reclamation Plan, BIA Leases #3-2-0087-9924 & 3-2-0066-9909, Avery Sand and Gravel Pit, Klickitat County, Washington.* The proposed sand and gravel extraction operation will supply aggregate products to local and regional markets. Four alternatives have been evaluated. The first alternative, the preferred alternative, involves expansion of the existing Avery Pit into a 21-acre tract to the north, known as V-179A. The second alternative involves mining of V-179A alone. The third alternative, the no action alternative, involves mining the present Avery Pit to depletion under the current permit and reclaiming. The fourth alternative involves developing and mining other aggregate sources. The first alternative was selected because of ultimate maximum recovery, as well as for practicality and suitability of reclamation and aesthetics. Impacts to land resources, water resources, air quality, and public health and safety can be easily mitigated. In terms of impacts to fisheries and wildlife, there is even potential for habitat enhancement. Applying these mitigation principles during mining and reclamation operations, economic sand and gravel extraction is a beneficial interim land use in consideration of present activities in the project area.

ENVIRONMENTAL ASSESSMENT FOR EXPANSION OF THE AVERY SAND AND GRAVEL PIT, VANCOUVER ALLOTMENTS 179 AND 179-A

APPLICANT:	Pacific Northwest Aggregates, Inc. 925 Fairgrounds Road Goldendale, Washington 98620 (509) 773-4900
LAND MANAGEMENT:	USDI, Bureau of Indian Affairs Yakama Agency Toppenish, Washington 98948 (509) 865-2255
OPERATOR:	Pacific Northwest Aggregates, Inc. 925 Fairgrounds Road Goldendale, Washington 98620 (509) 773-4900
PREPARED BY:	Halstead GeoNumerics P.O. Box 1535 Portland, Oregon 97207 Contact: Daniel R. Hack (503) 235-5848
SUBJECT PROPERTY:	Vancouver Allotments 179 and 179A, Section 14, T2N, R14E, WM
IMPACTED AREA:	Approximately 40 acres.
LAND STATUS:	Designated under the General Allotment Act of 1887. Managed by the Bureau of Indian Affairs, Yakama Agency. Mineral materials operations managed by Bureau of Land Management, Wenatchee Resource Area
PLAN and PERMIT STATUS:	Mining and Reclamation Plan of July 1990 for V-179 currently in effect. Bureau of Indian Affairs Sand and Gravel Permits #3-2-0087-9924 (V-179) and #3-2-0066-9909 (V-179A) in effect.
REQUEST:	A revision to the currently approved mine plan has been submitted to BLM for administrative review. Due to a change in land use, this *Environmental Assessment* is required for this proposal.
AVAILABILITY	

OF THIS EA: A copy of this EA and the related mine and reclamation plan together with applicable permits are on file at Pacific Northwest Aggregates business office and at the mine operation office on V179/V179A.

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1.0
PROJECT DESCRIPTION

1.1 PROJECT BACKGROUND

Halstead GeoNumerics (Halstead) has examined the active Avery Pit and Avery Flat area on numerous occasions from April 1997 to the present and was retained by Pacific Northwest Aggregates, Inc. (PNA) to prepare a major modification to the existing *mining and reclamation plan* (MRP) for the present active Avery pit on Indian allotment V-179, and the land parcel known as *V-179A* to the north. The preliminary MRP, cited as Halstead GeoNumerics (2000) was submitted on April 7, 2000 for administrative review by the Bureau of Land Management's (BLM) Wenatchee Resource Area, Spokane District, in consultation with Oregon / Washington State Office. Halstead was subsequently retained to perform an *Environmental Assessment* (EA) on the subject properties and plan, in coordination with officials from the BLM and the Bureau of Indian Affairs (BIA), Yakama Agency.

This EA was prepared concurrent with *Mining and Reclamation Plan, BIA Leases #3-2-0087-9924 & 3-2-0066-9909, Avery Sand and Gravel Pit, Klickitat County, Washington*. Those portions required for this EA will be cited and briefly restated. Further details can be found in the MRP. Figures showing project location and access, present topography, and post-reclamation topography can be found in Appendix I. An EA titled *Environmental Assessment: Avery Pit, U.S. Geological Survey EA#7917-I-1PNA* was prepared for V-179 in 1979. The current MRP for V-179 *Mining and Reclamation Plan for Avery Sand and Gravel Pit, Lease #1-1020* was approved in 1990

1.2 PROPERTY DESCRIPTION

The land containing the currently active Avery Pit is located in Klickitat County, Washington, two miles west of the town of Wishram, in the SE ¼ of the NE ¼ of Section 14, Township 2 North, Range 14 East, Willamette Meridian (see Figure 1). This parcel is also known as "Government Lot 1" or "Vancouver Allotment #179" (V-179), and was allotted under the General Allotment Act of 1887, remaining under the general management of the Bureau of Indian Affairs, Yakama Agency on behalf of the Indian mineral owners named in the MRP. The current lease was renewed for a period of 10 years in August, and will remain in the operation of Pacific Northwest Aggregates, Inc. (PNA). The pit is bordered on the south by two Burlington Northern rail lines and the Columbia River (including the landlocked parcel lying between the railroad tracks). To the east of the Avery Pit is property within the west one-half of the NW ¼ of Section 13, known as "East Avery", belonging to Mr. Edmond C. Layman of Goldendale, Washington and under a purchase option to PNA. This parcel was originally known as "Vancouver Allotment #189" (V-189). To the west, also within Section 14, is a large parcel known as "Vancouver Allotment #194" (V-194) owned by the Yakama Indian Nation and managed by the Bureau of Indian Affairs, Yakama Agency. V-194 was leased by BIA to Wheeler Logging for aggregate production.

The proposed expansion site to the north is identified as Vancouver Allotment #179A (V-179A). A ten year lease was officiated between PNA and the Indian mineral owner in July 1999. The leased tract is described as:

> *That part of the NE ¼ NE ¼ lying south of the right-of-way granted to State of Washington and excluding 13.27 acres homesite in Section 14 T 2N, R 14E, W.M., Wa., containing 21.00 acres more-or-less.*

It is bounded on the south by the active Avery Pit north permit boundary, on the north by several real estate lots along State Route 14, on the east by East Avery, and on the west by V-194. The impacted area will total approximately 13 acres of the total 21 acre lease area.

Vehicle access to the property is by *State Route 14* (SR-14) via the Avery turn-off (see Figure 1). An unpaved road leading from the Avery boat launch ramp to the east along the BNSF railroad right-of-way accesses the active Avery Pit. The site is also accessible from the north via the Tribal cemetery road. A dirt road, accessible by off-road and earthmoving equipment, extends northward into V-179A. Power transmission lines, belonging to the Klickitat County Public Utility District, parallel the rail line, as well as SR-14. The former extends power to V-179 for use in processing and loading mined material.

2.0
GOVERNING REGULATIONS AND GUIDELINES

Regulations pertaining to the leasing and permitting of solid minerals on allotted Indian lands are more fully described in Section 2.0 of the MRP.

Part 212 of Title 25 of the Code of Federal Regulations (CFR) covers the leasing of *allotted lands* for mineral development (*allotted lands* refers to parcels outside of a reservation proper that were awarded to individual Tribal members in the General Allotment Act of 1887). 43 CFR 3590.0-7 extends BLM trust management authority over allotted lands leased under 25 CFR 212. In terms of environmental compliance, 25 CFR Section 212.7 requires consistency with National Environmental Policy Act (NEPA) processes, the Archaeological and Historic Preservation Act, National Historic Preservation Act, and the American Indian Religious Freedom Act.

On July 27, 1999, Ernest Clark, then Superintendent of the Bureau of Indian Affairs Yakama Agency, issued a formal request to Pacific Northwest Aggregates for an *Environmental Assessment* for V-179A due to the proposed change in land use. In this request, Mr. Clark cited the use of *NEPA Handbook 30 BIA Manual Supplement 1* as guidance. Similar BLM guidance was used in preparation of this document, and is cited as BLM's *National Environmental Policy Act Handbook H-1790-1* (1988).

3.0
PURPOSE AND NEED OF PROPOSAL

The proposal is to develop Indian lands for aggregate resource extraction that will economically benefit tribal members, their families, and their community over the long-term. The MRP will expand the area that will be used to extract sand and gravel materials for transport and sale to local and regional construction aggregate markets. The primary uses for the material from Avery have and will continue to be as fine to coarse concrete aggregate, fill sand, drain rock, and road paving, surfacing, and base material. The extraction will be accomplished by an expansion of the existing Avery Pit on V-179, which has been in more or less continuous operation since at least the late 1950s by various operators generally doing business as Pacific Northwest Aggregates.

The need for this proposal is to achieve a reasonable balance between the rapidly expanding regional consumption of construction aggregate materials, and the environmental consequences of extending mining operations into previously undeveloped terrain. If a vast premium resource, such as that at Avery, were prematurely abandoned, dynamics of the construction aggregate market would force development of virgin sites elsewhere. This option is not logical when tens of millions of cubic yards of premium material lie immediately adjacent to the historically active Avery Pit in lands already leased for mineral development. Continued and expanded operation of the Avery Pit (i.e. development of both V-179 and V-179A) will provide much needed employment and increased job experience for tribal members and local residents, as well as royalty income for the Indian mineral owners.

This EA considers four alternatives: the Proposed Action (or Preferred Alternative) and three others, including No Action. A map of the lands referenced in the alternatives is in Appendix I as Figure 2. Legal descriptions of the land tracts are located in Section 1.2 – Property Description, of this EA or as restated below.

4.1 PROJECT DESCRIPTION

Location: The land tracts required for this alternative are V-179 (the current Avery Pit) and V-179A (the expansion property to the north) - see Figures 1 and 2.

Access: Road access to the property is from SR-14 via the connecting unpaved road leading from the Avery boat launch to the east along the river side of the BNSF right-of-way. The unpaved road re-crossed the double tracks at the southeast end of V-179 and continues northward into V-179A. PNA holds a non-exclusive right to use the portion of the access road through the Burlington Northern Santa Fe right-of-way, as well as a commercial use right-of-way from the U.S. Army Corps of Engineers for the portion of the road behind the Avery boat launch park. The site is also accessible from the north via the Tribal cemetery road.

Mining: Topsoil and overburden are and will be stripped and stockpiled or placed in temporary berms using scrapers, graders, or dozers on adjacent unmined phases. Mining will proceed downward in 30 to 50 foot lifts with intervening benches. Excavation of mine run material will be accomplished by rubber-tired loaders which will dump into a feeder hopper at the head of the processing facility. Each phase will be mined to final reclaimed slopes of 2:1 or less steep to the final maximum pit depth (see Section 3.0 of the MRP). The project will consist of six phases over approximately 40 acres. The four phases in V-179 will be mined primarily from south to north and will be of varying sizes. The two phases in V-179A will be mined from east to west.

Product transportation: Primary haulage of product material will be via an upgraded existing barge loading facility that has been in active use since the 1950s. Anticipated annual production will be 1.2 million short tons per year, and the proposed mine life until final completion of reclamation is around seven years.

4.2 MITIGATION MEASURES

Mitigation measures consist of three aspects: discretion during production operations, rolling reclamation concurrent with production, and successful final reclamation procedures. In terms of day-to-day procedures, PNA will follow the most recent industry standards for responsible operation in light of recent interest in, and subsequent legislation involving, environmentally sensitive operations. These procedures will include, but are not limited to:

- Haul trucks and employee vehicles will travel strictly on approved roads, and will comply with prudent speeds posted or appropriate for conditions.

- A perimeter fence and warning signs will be posted around the permit boundary until final reclamation is accepted by the BIA to discourage unauthorized entry, promote public safety, and discourage grazing pressure on newly re-vegetated areas.

- Reclamation and re-vegetation of each area within the pit will begin as soon as practical after that area has been mined back to final slope and is no longer required for other mining, processing, or haulage functions. This practice, known as *rolling reclamation*, will minimize the amount of disturbed and/or un-reclaimed ground open and without vegetation at any given time, as well as aid in slope stability.

- PNA will comply with all applicable federal, state, and local laws and regulations with regard to fire, health, and safety, under 30 CFR 56 – Mine Safety and Health Administration Safety and Health Regulations for small non-metal mines.

- Fire extinguishers will be kept on site and in all heavy equipment to aid in rapidly controlling the spread of a small fire. Mining equipment and water trucks will be used to help suppress larger fires.

- Settling ponds will have sloped sides that allow for emergency egress / ingress.

- PNA will comply with all applicable federal, state, and local laws regarding air and water quality, and will use industry standard operational controls on those aspects not explicitly regulated.

- If any evidence of cultural and/or archaeological resources are encountered during active excavation operations, earthmoving activities in that area will be curtailed until the Cultural Resources Department at the Yakama Indian Nation has been notified and the proper course of action determined (cultural / archaeological inventories and mitigation are discussed in detail later in this EA).

Reclamation procedures are covered in detail in Section 4.0 – Description of Proposed Reclamation Plans of the MRP. The activities can be summarized as:

- After reclamation the intended use for the site will be for grazing or dry/irrigated-land agriculture. This is consistent with historic and current adjacent land uses. However, PNA will continue to consult with the land owners and will make reasonable adjustments to the MRP final reclamation objectives.

- As soon as mining has retreated a sufficient distance from an exhausted area of the pit, reshaping, topsoil replacement, and seeding will be completed in as little as 2 weeks.

- The pit walls in a mined out segment will be left at a 2:1 slope or shallower if this degree of slope proves to be unstable. The exception to this will be if V-179 and V-179A are combined with V-194 to the west, pending agreements between PNA and the owners of V-194. In this instance, V-179 and V-179A will daylight to the west. See the proposed mitigation in Section 8.1 – Land Resources for a description of plans to test slope stability within test segments.

- Vegetation to be seeded has been specifically selected to be drought resistant, suitable for sandy coarse soils, and particularly favorable for slope stabilization in high friction, low cohesion materials. See the mitigation in Section 8.5 – Vegetation, for a description of re-vegetation species, manner of site preparation, planting, and post-reclamation monitoring and repair.

- Remaining processing equipment, surface facilities, and any other articles that were not on the project site prior to mining will be hauled away from the site and properly sold or disposed of., All evidence of their existence on the site (foundations, parking areas, etc.) will be reclaimed and re-vegetated.

- Final haul and access roads will be stripped of any base gravel, blended into the completed slopes, ripped to relieve compaction, and re-vegetated.

5.1 ALTERNATIVE B: MINING OF V-179A AS A SEPARATE OPERATION

5.1.1 PROJECT DESCRIPTION

This alternative contemplates that the active Avery Pit and the unexploited materials in V-179A would be mined separately, either because they would be mined by separate operators, or because there had to be a physical separation between the two properties due to royalty payment considerations. With this scenario, reclaiming the present Avery Pit to conform with the standards set in the 1990 mine plan would result in little mineable material left within the lease boundaries (i.e., remaining material would be required to bring slopes to the approved post-mining grade).

Location: The land tract required for this alternative is V-179A only (see Figure 2 in Appendix I).

Access: Access would be from SR-14 and across intervening private land via the Tribal cemetery road. Access across V-179 would require traveling across lands that are being reclaimed, or under supervision of another company.

Mining: Mining is identical to *Alternative A*, except that only the three phases in V-179A will be involved.

Product Transportation: Product transportation is identical to *Alternative A*, except that potentially problematic transshipment across V-179 would be needed to reach the existing barge loading facility. This would cause delays in reclamation and final abandonment for V-179 due to overland conveyors and transfer points originating from operations at V-179A.

5.1.2 MITIGATION MEASURES

Mitigation measures would be of the same character as those in Alternative A, except that reclamation would be for a smaller mine and may not be coincident with reclamation of V-179, which could conceivably be subject to different standards. Mitigation differences between Alternative A and Alternative B primarily effect post-mining land use and aesthetics. The combined excavation created in Alternative A would be much more economically useful after mining than the two separate excavations created in Alternative B. Likewise, a single excavation would have a more natural visual impact than two excavations where one is an isolated pit.

5.2 ALTERNATIVE C: NO ACTION

5.2.1 PROJECT DESCRIPTION

This alternative contemplates that V-179 (the present active permit) would be mined to depletion, and reclaimed to the present approved mine plan requirements. Reclamation requirements from the 1990 MRP involved topsoil spreading and re-seeding after final mining to 2:1 to 3:1 slopes with intermediate benching, down to the elevation of the railroad tracks. If this plan were adhered to, the current mine would be nearly exhausted because of the material required to bring slopes to the approved final grade. Even if the mine plan were amended to incorporate an expansion within the present permit boundary, there still would be very little additional material that could be mined. This alternative would leave tens of millions of tons of valuable aggregate resources in the ground.

Location: The land tract required for this alternative is V-179 only (see Figure 2 in Appendix I).

Access: Access would be identical to *Alternative A*.

Mining: Mining would be identical to *Alternative A*, except that only the four phases in V-179 would be involved.

Product Transportation: Product transportation is identical to *Alternative A*.

5.2.2 MITIGATION MEASURES

Mitigation would be similar to that for *Alternative A*, except that the only required reclamation measures would be those detailed in the existing 1990 mine plan, as well as whatever reclamation measures would be required in an updated MRP for the present acreage.

6.0
ALTERNATIVES CONSIDERED BUT NOT ANALYZED IN DETAIL

6.1 ALTERNATIVE D: MINING FROM OTHER SOURCES

With this alternative, V-179 would be mined to currently planned depletion and reclaimed, and other properties would be acquired for the development of needed aggregate resources. Location, access, mining, and product transportation are site specific. Options for acquisition include:

- *The Dallesport peninsula*: This area already has several active gravel mining projects and was not further analyzed because of location, access, or relation to time prohibitive county land use processes. Permitting a new property or proposing an expansion would be prohibitive in terms of time and professional costs. Furthermore, valuable and technically feasible resource already leased would be left unmined on V-179 and V-179A.

- *New gravel properties on other Tribal lands*: This alternative was not further analyzed because of the logistical difficulty and environmental sensitivity of developing mining projects in previously undisturbed areas. This would comprise the effective use of tribal lands that could better benefit from habitat, agriculture, or cultural resource protection. Furthermore, access may not be as ideal as at Avery (i.e., barge and rail), and would impact additional state highways and/or county roads.

- *Other local gravel properties on non-Tribal lands*: This alternative was not further analyzed because these lands would be within the jurisdiction of the Columbia River Gorge National Scenic Area Act. Permitting of non-Tribal lands not within the National Scenic Area would be problematic due to Klickitat County land use processes.

7.1 LAND RESOURCES

7.1.1 TOPOGRAPHY

The Avery property (Avery) is located in an area known commonly as *Avery Flat* on the north side of the Columbia River. Regionally, the Columbia River Basin area is a plateau subdivided by gorges and canyons, with broad extensive slopes and low mountain ranges. The main topographic feature is the westward-trending 800-foot deep channel etched by the Columbia River. Locally, Avery lies on the steeper south limb of the Columbia Hills anticline (an up-fold in the local bedrock). Much of the land surface off to the east and west slopes gently downward from SR-14 toward the Columbia River. In the immediate vicinity of the active pit on Indian allotment V-179, there is a large bluff north of the BNSF mainline (much of this feature has already been mined out). Small drainage gulches routinely occur, draining off of the Columbia Hills. These rarely contain flowing water, except during extreme storm events. There are no natural surface waters or wet land areas present on the Avery property which encompasses both V-179 and the adjoining Indian allotment to the north designated as V-179A.

The current elevation in the active pit floor on V-179 is about 150 feet above Mean Sea Level, with the average pit rim at an elevation of about 300 feet.

7.1.2 SOILS

Kolling (1979) describes the soils in the area characterized by the interfingering of two units:

- The Lickskillet-Nansene association, described as *" . . . generally silty soils formed in materials mixed with rocky residuum-colluvium from basic rock types on plateaus, canyons, and mountains . . ."*.

- The Waha-Athena association, described as *". . . generally silty or sandy soils formed in wind deposited or wind worked sediments on hilly uplands . . ."*.

More detailed information is given in an advance copy of the "Soil Survey of Klickitat County, Washington", which is still in preparation, obtained from the Goldendale office of the U.S. Department of Agriculture Natural Resources Conservation Service, and will be referenced as Kreft (1998).

The area north and northeast of the project is dominated by an *Ewall loamy sand* at 15 to 30 percent slopes, described as *". . . very deep, and excessively drained . . . formed in eolian sand on terrace escarpments . . ."*. The area to the immediate north and west of the active pit is dominated by a *Dallesport gravelly fine sandy loam* at 0 to 8 percent slopes, *". . . very deep,*

and somewhat excessively drained . . . formed in eolian deposits over sand and gravel on terraces . . .”. The area immediately northeast of the pit, as well as in a small slice along the river straddling the Section 13 quarter-section line is *also Dallesport gravelly fine sandy loam*, but at 8 to 15 percent slopes. The final soil type in the project area is the 15 to 30 percent slope variety of *Dallesport gravelly fine sandy loam*, occurring primarily to the east of the active pit, and up the ravine that strikes northwest in the NW ¼ of Section 13. As per these descriptions, it is apparent that these soils are of the Waha-Athena association, primarily due to their eolian origin.

The thickness of combined, topsoil, overburden, and *blow sand* is generally around four feet. Test holes excavated in coordination with the MRP identified overburden 1 to 7 feet thick. There are indications that overburden thickness on the portion of the pre-mining surface that has long since been stripped away was even greater. A letter dated June 24 1965 from J. W. Moffitt, Mining Engineer, U.S. Geological Survey Branch of Mining Operations, to Superintendent, Bureau of Indian Affairs Yakima Agency, said *“The gravel bed is located on a hillside and is covered with up to 8 feet of soil . . .”*. Records of test holes at V-194 to the west have described overburden thickness from 8 to 12 feet thick.

7.1.3 GEOLOGY

Avery is located within a gravel bar on the north bank of the Columbia River. The deposit is nearly two miles long and approximately ½ mile wide at the broadest. Along its northern extent, maximum deposit depth probably coincides with the talus slopes. A Washington Department of Ecology Water Well Report (see Appendix II) describes a gravel / talus interface at a depth of 207 feet, which would roughly coincide with an elevation of approximately 220 feet above Mean Sea Level. It is possible that portions of the deposit further from the talus slope have a thickness greater than 300 feet.

Ten test pits were excavated on parcel V-179A in the fall of 1999. Results of this limited sub-surface examination are detailed in the MRP. In general, 1 to 7 feet of overburden (*blow sand* and topsoil) overlies 2 to 18 feet of soil mixed with ½” rock to 60” boulders. All of the test pits terminated in *mason sand* at 9 to 20 feet depth. Raw overburden thickness, as well as the depth to the top of the sand layer, decreased to the southwest.

In terms of economic usage of the different units, basalt boulders in the overburden material can be processed for use in asphalt and the sand can be used as concrete sand or in asphalt mixes. The underlying terrace gravel can be processed for fine and coarse concrete aggregate, drain rock, and for other commercial uses.

7.2 AIR RESOURCES

Air quality in the area is a product of prevailing ambient conditions and the current mining operations at the existing Avery Pit (V-179), which take place in a substantial topographical low as deep as 250 feet below the north crest of the pit wall. Dust from gravel processing is minimal due to wet crushing and screening of gravel products, with some dust associated with loading,

haulage, maintenance and other mine activities. During substantial winds, impacts from dust and sand transport outside of the active pit is primarily confined to the unoccupied area to the immediate east. A trench was constructed some years ago to trap wind blown sand that might otherwise be deposited on an adjacent Tribal cemetery. Agricultural spraying from orchards ¼ mile to the west impact the northern end of V-179A only during high winds.

The strongest winds reported in The Dalles are typically west-northwest winds at and average approximately 13 miles per hours. Other predominant wind directions are north-west and north-northwest.

7.3 WATER RESOURCES

The project site is located on the north side of the Columbia River. No natural streams, ponds, wetlands, or springs are located on the site. A settling pond for fines from aggregate washing is currently in use in the southwest portion of the active pit. An on-site water well, shown in Figure 2 in Appendix I, is the sole source of water for the processing plant and other uses. The nearest intermittent drainages, based on erosional features, are approximately ¼ to ½ mile to the east and west. The Wild and Scenic Rivers Act is not applicable to this project. The Oregon Climate Service reports that the average annual precipitation at The Dalles from 1998 - 1999 was 14.6 inches. For January to August 1999, the average monthly precipitation was 0.33 inches per month.

A water well, shown in Figure 2 in Appendix I, is maintained for domestic uses for the residences between V-179A and SR-14. A Washington Department of Ecology Water Well Report (from September 1977) describes water at a depth of 275 feet, which roughly coincides with the adjacent Columbia River elevation. Direction of movement is interpreted to range from being sub-parallel to the River, in a downstream direction, to a direction of right angle to the riverbank. The elevation of the Columbia River varies daily and seasonally due to operations at The Dalles Dam. The domestic well is upgradient of the project site, so it could not be impacted by the on-site process water well.

The BNSF railroad mainline lies between the active pit and the river, keeping the maximum possible pit 300 feet from the river bank. This segment buffers the river from accidental discharges from the settling pond, as well as lessening water quality affects resulting from the interaction of infiltrated stormwater and river-dominated groundwater.

7.4 FISHERIES

The current active site and proposed expansion of mining onto V-179A are upland of the BNSF railroad mainline right-of-way and the Columbia River. No natural streams, ponds, wetlands, or springs exist within the project boundaries that would provide fish habitat within the project boundaries.

The reach of the Columbia River upstream from The Dalles Dam supports a variety of resident and anadromous fish. These species include threatened and endangered salmon and steelhead adults and juveniles that use the adjacent reach of the Columbia River for seasonal migration. Resident fish habitat in the vicinity include holding, rearing, and feeding in deepwater offshore areas. There

is no known salmon or steelhead spawning or habitat along the river shoreline. Near-shore shallow habitat has only minimal riparian vegetative cover that could potentially support fish, but is primarily used by aquatic invertebrates.

7.5 VEGETATION

The general project area is characterized by upland shrub-steppe habitat, populated with non-native weeds and grasses. Native species are uncommon on the project site. Typical local species include cheat grass, bunch grass, bitter brush, sage and buckwheat. There are no trees on the site.

7.5.1 NOXIOUS WEEDS

Several species of noxious weeds (diffuse knapweed and thistle) were identified by the Yakama Nation Vegetation Management Program in the project area during development of the EA and reclamation plan for proposed mining of V-194. Specific species were not given in either document, but are generally dominated by cheatgrass.

7.6 WILDLIFE

The Yakama Indian Nation Wildlife Resource Management Staff conducted a wildlife survey on the site of proposed mining operations to the immediate west (V-194) in August 1999. The survey reported a predominance of introduced plant species with little native vegetation, as well as little practical value as wildlife habitat due to the proximity of SR-14, the railroad, and the active Avery Pit. Furthermore, the characteristics of the area do not support resident large mammals. The primary wildlife species identified include insects and small birds and mammals, with reports of deer crossing the area. Poplar trees near the Avery boat launch park have the potential to support raptor habitat.

The field observations and interpretations of this survey can be extrapolated to the proposed northern expansion area (V-179A), as the parcels are contiguous and identical in terms of vegetation and habitat. A request for proposal input was filed with the Yakama Indian Nation Wildlife Resource Program in January 2000 for the project site. If the results are different from those of the adjacent area, that information will be filed as a supplement to this EA.

7.7 THREATENED AND ENDANGERED SPECIES

The Yakama Indian Nation survey of the tract V-194 to the immediate west did not indicate the presence of any threatened or endangered upland species. A Washington National Heritage Information System (WNHIS) report for V-194 indicated that no protected plant species (threatened, endangered, or sensitive) have been identified for Klickitat County or the project area. However, six plant species of concern (an unofficial federal status) could hypothetically reside in the area. These species include Northern wormwood, Ames' milk-vetch, Long-bearded sego lily, Suksdorf's desert parsley, Liverwwort monkey flower, Barrett's beardtongue, and Obscure buttercup. A request for proposal input was filed with the WNHIS in January 2000. If the results

are different from those of the adjacent area, that information will be filed as a supplement to this EA.

Nine species of salmon and steelhead currently listed as threatened or endangered are known to use the adjacent Columbia River.

7.8 CULTURAL AND ARCHAEOLOGICAL RESOURCES

Archaeological Investigations Northwest (AINW) performed an archival records search and surface survey for cultural resources at the site during December 1999. The literature review and records search indicated that the greater project area has historically been a major regional focus of American Indian use, with major settlements and fishing camps along this stretch of the Columbia River until the 1950s. The abandonment or relocation of these settlements was coincident with construction of The Dalles Dam in the early 1950s, six miles to the west. Even though the area has been a major focus of archaeological research since the 1920s, available archaeological and ethnographic data are focused along the river, neglecting traditional uses of areas back from the river. Based on the proximity of the site to areas of intense and long-term native use, as well as the dearth of formal investigations, it is possible that occasional artifacts and burials could be present.

The AINW field survey consisted of a systematic surface examination of the proposed expansion area (V-179A). The only evidence of any historic use of the property was a low "rock wall" in southwestern V-179A. This feature was also cited in the Eagle Point Gravel Pit Environmental Assessment for V-194, and was attributed to *"¼historical sheep grazing ¼"*. No other evidence of archaeological or historical resources have been observed on the project site. The full AINW report *An Archaeological and Historical Survey of the Proposed Avery Pit Expansion Location, Klickitat County, Washington, June 2000*, will be made available for cultural resource specialists reviewing this document, but otherwise will be held confidential.

There are two marked tribal cemeteries immediately southeast of V-179A. One is within V-179 approximately 300 feet south of V-179A and is surrounded by a 150 by 150 foot fenced area (0.5 acres). Recent field discussions with Yakama Nation Cultural Resource Department representatives (see Section 8.8 – Cultural and Archaeological Resources) have indicated there is a high potential for burials in areas north and northeast of this cemetery. The second cemetery is within a privately held tract to the east (former Vancouver Allotment #189) and is approximately 200 feet southeast of V-179A. It is enclosed by a 70 by 80 foot fenced area (0.13 acres), and is within the previously mentioned tract that has high potential for burials.

Correspondence from Bill White, Yakama Indian Nation (YIN) Wildlife Archaeologist, in *Appendix B – Yakama Nation and Agency Comments* of the Eagle Point Environmental Assessment indicated that a prehistoric tool had been discovered in the backfill of a test trench in the southwest corner of V-194. The letter also suggested that the stone wall represents an historic property that is <u>not</u> eligible for inclusion in the National Register of Historic Places.

7.9 AGRICULTURE

There is no present agricultural activity in the project area. Nearby tracts have been used in the past for cattle grazing, but there is none active at this time. An active orchards exists about ¼ mile west of the present active Avery Pit. The only possibilities for agriculture are future use of the reclaimed project site for grazing, dryland agriculture, irrigated agriculture, or orchards. Grazing or minor dryland agriculture are included in the MRP as possible post-mining land uses. Implementation of any other proposals would have to be amended to the plan.

7.10 EMPLOYMENT

The present mining operation on V-179 employs 10 workers (including 2 supervisors) on-site per shift during full production. As described in the MRP, this staffing level should prove adequate throughout the life of the mine for combined V-179 / V-179A operations.

7.11 INCOME

Mining operations at the Avery Pit have been providing royalty income for tribal members since 1959. Capital improvements and expanded production at the mine within the last three years have significantly increased that income. Expansion into V-179A would provide additional and significant royalty income as well as revenue from crossing fees to tribal members.

7.12 RESOURCE USE PATTERNS

Local land uses in the project area consist of mining at the active Avery Pit, agriculture at the orchards ¼ mile to the west, use of the BNSF railroad mainline, recreation at the Avery Boat Launch Park, and potential aggregate mining on adjoining parcel V-194 to the west. Capital improvements in the area include the railroad mainline and affiliated frontage road (also used as primary access to the Avery Pit), trunk utility power line to V-179, aggregate stockpiling and affiliated barge loading facilities, internal haul roads on V-179, SR-14 and access therefrom to the Avery Pit through adjacent residences, and a preliminary access road developed on V-194 in October 1999. There are currently three occupied residences between the V-179A northern project boundary and SR-14.

No unique or prime farmlands are on or surround the site. The Wilderness Act does not apply to the site or surrounding area. Both V-179 and 179A are Indian lands and thus exempt under the Columbia River Gorge National Scenic Area Act. As there are no known threatened or endangered plants or animals on site, there are no issues under the Endangered Species Act.

7.13 NOISE AND LIGHTS

Noise from existing operations including trucks, loaders, and crushers rarely extends beyond the active pit. This is due to production operations being in a depression as much as 250 feet below the crest of the pit. No on-site generators are required, as electric power is provided by an existing trunk utility line. There have been no recorded noise complaints from neighbors. No blasting is required due to the unconsolidated nature of the deposit. Flood lights used during night time operations are shielded and not visible from adjacent residences. They are only visible from the

BNSF mainline, frontage road, and from Interstate 84 (I-84) on the Oregon side of the Columbia River.

Other sources of noise and lights include the orchard operations ¼ mile to the west, trains on the BNSF mainline, barge loading and other river traffic, and from vehicle traffic on SR-14 to the north, and on I-84 depending on temperature and prevailing wind conditions.

7.14 AESTHETICS

The project site is along the north shore of the Columbia River within the Columbia River Gorge National Scenic Area. The two tracts that comprise the proposed mining operations are within lands designated under the General Allotment Act of 1887. For this reason, the land is exempt from the Columbia River National Scenic Area Act. The site is visible from the Columbia River, I-84, and the BNSF mainline and frontage road. The site is currently not visible from SR-14 and only faintly discernible from the downstream Avery Boat Launch and park area.

7.15 PUBLIC HEALTH AND SAFETY

In the 40 year history of mining operations at the Avery Pit, there have been no recorded incidents of problems with public health or safety. Three houses are located within a few hundred feet of the north project boundary, and the access road along the BNSF mainline from the Avery Boat Launch is used by railroad employees, PNA employees, and infrequently by fishermen. Appropriate warning signs are posted at all railroad crossings and a safety flag person is present when processed aggregate is being added or removed by truck from the stockpile areas situated between the two branches of the BNSF mainline. A majority of product material crosses the railroad right-of-way through under-track conveyor galleries. There have been no indications of past problems with control of hazardous materials. However, improvements in the management of hazardous materials are detailed in the MRP, with a formal oil spill prevention, control, and countermeasure plan to follow. See Section 8.3.2 – Hazardous Materials for further discussion.

This section describes both direct and indirect environmental impacts that will result from each of the alternatives and how those potentially adverse impacts will be mitigated as part of the MRP. Although all four alternatives were evaluated, the focus is on Alternative A (existing Avery Pit expanded into V-179A), Alternative B (mining only V-179A), and Alternative C (mining only of V-179). Alternative D (development of other sites) will not be discussed because each of the sub-alternatives have been shown in Section 6.1 of this EA to warrant no further analysis based on the stated economic and environmental factors. As shown in the following sub-sections, there are no unanticipated or unmitigated impacts for preferred Alternative A.

8.1 LAND RESOURCES

Anticipated Impacts.

Alternative A Approximately 6.9 million tons (4.2 million cubic yards) will be mined across 44 acres over 6 years. If combined with the proposed operations on V-194 to the west, the resulting pit would affect (daylight) over 160 acres.

Alternative B Approximately 4.1 million tons (2.5 million cubic yards) will be mined across 18 acres over 3 years. Production operations will utilize existing access roads.

Alternative C Further mining would be of limited volume, and most activity would involve backfilling, re-grading, and re-seeding.

Impacts common to Alternatives A, B, and C. The final pit floor will be coincident with the BNSF railroad mainline, about 170 feet above Mean Sea Level. For Alternative C, further mining would be of a limited volume.

Proposed mitigation.

Mitigation common to Alternatives A and B. The proposed mitigation for project impacts is to practice *rolling reclamation,* i.e., reclaiming exhausted areas of the pit as soon as mining has retreated a sufficient distance. The final pit floor will be covered with a minimum of six inches of topsoil, the pit slopes with a minimum of one foot of soil, and each 7-acre segment re-seeded at the earliest optimal planting time (usually within a few weeks). The source of the topsoil will be derived from topsoil that has been stripped from the next un-mined segment. Final reclaimed slopes will be re-graded to no steeper than 2:1 and benched every 30 to 50 vertical feet (see Figure 3 in Appendix I). If needed, one or more armored (rock lined) surface drainage ways will be established to prevent gullying of the pit back slopes. As shown in Figure 3 in Appendix I, areas have been designated in Phase I and Phase II for the final disposal of unsold fines and sand, respectively, after the cessation of mining. As described in the MRP, this material is inert and will be graded and re-vegetated to blend with the reclamation of adjacent post-mining topography.

During mining of segments as defined in the MRP, topsoil and overburden material will be temporarily placed in perimeter berms in order to minimize haulage distance and storage time. At no time will the placement of overburden material directly or indirectly impact the cemetery protection area (see Section 8.8 – Cultural and Archaeological Resources), such as by having the potential to initiate erosion or by interfering with surface or subsurface cultural resources.

A certain amount of flexibility will be employed regarding setbacks from the permit / lease boundary. Presently, there is a survey discrepancy between the 1999 Hackwith Surveying survey of Allotment V-194 and the legal survey done by R.A. Edwards & Associates for Allotment V-179 in 1978. The discrepancy will be reconciled by an ongoing BLM survey. Pending an agreement between the surface and mineral owners and lessees of V-179/V-179A and V-194, mining on the west will proceed to connect through to V-194 rather than leave an unmined boundary pillar along the property line. Furthermore, the resolution of this discrepancy will aid in the proper disposition of royalties for material mined in the vicinity of the property line, as well as reclamation responsibilities.

Alternatives A and B. The reclamation plan involves contouring and re-grading final reclamation slopes and top dressing with on-site topsoil and overburden material, followed by re-vegetation with approved species. On V-179A, reclamation topsoil will be derived from adjacent segments. On barren segments of V-179, reclamation topsoil will be derived from surplus material from other segments and/or a combination of available topsoil and fines removed from on-site settling ponds. For topsoil replacement and re-vegetation schemes and schedules, see Section 4.2 and Figure 3 in the MRP. Re-vegetation species are discussed in Section 8.5 – Vegetation of this report. For discussion of material surpluses, see Section 3.4.4.1 in the MRP. Haul and access roads will be retained if requested by the surface owner, or reclaimed at the conclusion of mining by ripping, return to prevailing slope grade, topsoiling, and seeding. The final reclaimed site will be monitored and maintained as described in Section 4.7 of the MRP. Final approval of the reclamation is pending from BLM, BIA, and the surface and mineral owners.

Consultation from the Yakama Nation soils scientist for the V-194 EA made several important points for the adjacent property that were taken into consideration when developing mitigation measures for V-179 / V-179A.

- Topsoil taken from stockpiles may not provide a suitable rooting media without additional reclamation considerations such as starter fertilizer, surface mulching, and contour terracing. The MRP recommends types and methods of fertilizing and mulching.

- Reclamation slopes will not exceed 2:1. This is the final pit slope as detailed in the MRP. During the first phases of final reclamation, the above described slope parameters (i.e., slope angle and benching) will be evaluated in a selected test area to verify the stability of these conditions, as well as to determine if the slopes can be effectively traversed by the type of equipment that will be used to place and plant the final reclamation soil cover. The test area will be in MRP Phase II, which will be away from the bulk of ongoing production

operations. If test slopes show any sign of instability, further stabilization measures or shallower final slopes will be proposed.

- Operational phases should be smaller than the 12-acres proposed for V-194. Proposed phases for V-179/V-179A will be no more than 7 acres.

- Recommendations should be applied to all gravel mining activity in the area to account for cumulative effects of mining in the area.

Alternative C. Mitigation for this alternative would be derived from the existing August 1990 MRP, or from a revised plan based on the re-issued lease. The plan was similar in context to the present proposal, but requirements were less stringent, i.e. maximum 2:1 slopes with 50-foot benching, but with only 2 inches of topsoil required.

8.1.1 TOPOGRAPHY

Anticipated Impacts.

Impacts Common to Alternatives A and B. The site topography will be modified due to the planned excavation and aggregate removal. For details of excavation and final reclaimed topography, see Section 5.1 and Figure 4 in the MRP.

Proposed Mitigation.

See *Proposed Mitigation* in Section 8.1: Land Resources, of this EA.

8.1.2 SOILS AND GEOLOGY

Anticipated Impacts.

Impacts Common to Alternatives A and B. The volume of material given in Section 5.1 includes approximately 84,000 cubic yards of topsoil and 26,000 cubic yards of surplus *fines* (< 200 mesh). If half of the fines are used as *top dressing* to supplement reclamation topsoil, 79,000 yd^3 of topsoil will be available for sale or other uses, including augmentation of the planned soil cover over final mine slopes. For discussion of material balances, see Section 3.4.4.1 in the MRP.

Ten test pits were excavated on parcel V-179A. For details, see Section 3.11 in the MRP. Stratigraphy from top to bottom is generally 1 to 7 feet of overburden over 2 to 18 feet of soil mixed with ½" rock to 60" boulders, with *mason sand* at 9 to 20 feet depth. A Washington Department of Ecology Water Well Report for a residence between the northeast corner of V-179A and SR-14 provides cursory information on subsurface geologic conditions. This document is presented in Appendix II of this EA, and the location of the house well is shown on Figure 2 in Appendix I.

Proposed Mitigation.

See *Proposed Mitigation* in Section 8.1: Land Resources, of this EA.

8.2 AIR RESOURCES

Anticipated Impacts.

Impacts common to Alternatives A, B, and C. Periodic operational dust should be expected from excavation, internal haulage, and limited haulage on the access road, as well as minor dust from new topsoil and overburden stockpiles before re-seeded vegetation takes hold. However, air quality of the greater project area should not be adversely impacted. Due to its location in a topographic low, prevailing westerly winds in the Gorge limit dust impact to the project site, except for infrequent impacts along the access road due to trucks. There have never been reported problems with dust impact to the residences along SR-14 to the north of V-179A.

Proposed Mitigation.

Mitigation common for Alternatives A, B, and C. If blowing dust from active mining areas or haul roads becomes problematic in V-179 and/or V-179A, passes by a water truck will be used to reduce impacts. Production operations, as well as topsoil and overburden stripping, in the north of V-179A closest to residences will be planned for times not likely to exhibit dry, windy conditions. In the event of blowing dust, passes by a water truck will be used to reduce impacts. During strong winds, operations will be temporarily suspended if off-site air quality is seriously degraded. A water truck will be used during topsoil stripping only at the approval of those parties conducting archaeological monitoring (wet topsoil could compromise the identification of staining from human remains). After topsoil is placed in perimeter berms, it will be seeded immediately and irrigated if necessary to facilitate rapid germination and initial growth. Mulch or straw will cover the surface to anchor the seed and aid in dust suppression. Material stockpiles will generally be in the active pit floor or near the barge load-out. The coarse to aggregate size of stockpiled material will naturally resist wind erosion. However, in the event of problems, the stockpiles will also be watered down to minimize impact.

PNA, lessee of the access road from the boat launch park east to the Avery Pit, and BNSF, owner and lessor of this road, are currently working to devise measures acceptable to both parties for the mitigation of dust impacts along the access road. These range from periodic passes by a water truck to use of commercial tackants or emulsions.

In areas where blowing sand has been problematic placement of mesh, straw, or mulch or temporary gravel cover will be used if this problem continues.

Under 42 USC 7411, new or modified stationary sources listed in various industrial categories must conform to New Source Performance Standards. These standards are detailed in 40 CFR 60. For mining activities, the U.S. Environmental Protection Agency (EPA) has developed the Best Available Control Strategy to minimize fugitive dust emissions. A review is required to determine the Best Available Control Technology where potential fugitive dust emissions exceed 250 tons per year. However, each mine operator is expected to employ Best Management

Practices for fugitive dust, regardless of concentrations during operation. Electricity for the processing plant is brought in by power transmission lines. There will be no on-site generator engine exhaust emissions. During mining within the project area, the following guidelines will be used:

- During dry windy periods, haulage roads will be watered for dust suppression.
- The current practice of wet processing will significantly lessen operational dust, as well as during processing and at transfer points to haulage.
- Sandy areas subject to wind erosion will be seeded and covered with straw for dust suppression if this becomes problematic.
- More difficult areas will be chemically or physically stabilized.
- Drift and silt fences, and/or trenches will be constructed as needed to minimize migration of wind blown material onto adjoining private property and SR-14.

8.3 WATER RESOURCES

Anticipated Impacts.

Impacts common to Alternatives A, B, and C. No significant water resource impacts are anticipated for any of these alternatives. No natural streams, ponds, wetlands, springs, or drainages are located on the site. A settling pond is currently in use in the southwest portion of the active pit on V-179 and will be expanded or new ponds added as mining progresses. Only intermittent snowmelt and stormwater run-off enters the site on a seasonal basis. The final topography has been designed so run-on percolates into the ground and does not directly enter the Columbia River. The active pit will be at least 300 feet from the river, due to the BNSF mainline and frontage road. This buffer will minimize subsurface mixing of river and site groundwater, as well as protect against accidental discharges from the settling pond, or on-site spills of fuels, lubricants, or coolants. Water quality or yield of residential water wells to the north will not be impacted by proposed mining or processing operations or process water withdrawals because the residential wells are up-gradient from the active operation and separated by a distance of over 1600 feet. Current pumping from the process water well on V-179 has had no reported effect on the up-gradient residential well.

Water is pumped from an existing well on V-179 (see Figure 2 in Appendix I for location). This will be used to supplement processing circuit recycle water and for dust control. This well does not affect nearby residential or agricultural wells. The Yakama Indian Nation and the Washington Department of Ecology have no permitting authority for water rights on off-reservation individually-owned allotments. However, stipulation #22 of the Sand and Gravel Permit for V-179 states *"¼water in situ at the premises shall be made available to the Permittee for its removal operations ¼ any wells drilled shall, following the permitted term, be capped and otherwise preserved for the use of the Permitter thereafter¼"*. This lease stipulation implies a *de facto*

regulation of water withdrawal by the allottees as part of the lease. Any other regulation of this withdrawal would require an agreement between PNA, the Tribe, and the allottees.

Water recycled from settling ponds, supplemented by approved water withdrawals, will be used in the wash plant to remove the fine materials (< 200 mesh). This will be the major water use. Water discharged from the processing circuit will be sent back to the settling ponds for recycling. Any other water uses will be incidental, as described in Section 3.5 of the MRP. Accidental spills of product, oil, and fuel into the river are conceivable from barges and push boats and from other river uses because this section of the river supports heavy barge traffic. These spills are under the jurisdiction of the U.S. Coast Guard, and/or the U.S. Environmental Protection Agency. The proposed expansions as described in the MRP have the potential to create cumulative additional impacts on water resources within the river because the more product that is barged away, the heightened probability / opportunity for a spill.

See Section 8.3.2 – Hazardous Materials for a discussion of fuel and oil usage, and spill prevention, cleanup, and mitigation.

Proposed Mitigation.

Mitigation common for Alternatives A, B, and C. No waste water will be discharged off-site, as all process water will be recycled. Snowmelt and stormwater run-off will rapidly percolate into the ground, or move to a low point in the mine pit and infiltrate underlying materials. A 300-foot buffer between the active pit and the river will virtually preclude any probability of direct surface run-off into the Columbia River, as well as protect against accidental discharges from the settling pond. The buffer will also slow migration of any deleterious materials, giving them an opportunity to chelate, thereby minimizing the effect of subsurface mixing of infiltration from the mine area with local groundwater.

Mitigation common for Alternatives A and B. If there is future concern for local well impacts, all accessible local wells will be monitored to determine the nature of these impacts and mitigatory measures will be proposed at that time. Current barge loading procedures will be followed to prevent inadvertent material losses to the river. The barge operator will follow standard procedures to minimize the loss of oil or fuel during material loading and down-river material transport activities. The U.S. Coast Guard and/or EPA will be immediately notified by the barge operator should a fuel/oil spill or leak occur during loading operations.

8.3.2 HAZARDOUS MATERIALS

Anticipated Impacts.

Impacts Common to Alternatives A, B, and C. A diesel fuel storage tank, machine lubricant storage tank, and small coolant storage containers will be maintained at the site to support on site equipment. Since diesel fuel usage is limited to excavation and haulage equipment (i.e., no generator), fuel storage onsite is limited to one 1,000 gallon above ground, horizontal single-walled storage tank. Lubricant storage generally consists of no more than 300 gallons of all types of oil

(motor, hydraulic, and gear oil), as well as 2 cases of grease. There is no more than 50 gallons (one drum) of coolants on site at a time. Contractors using common carrier fuel trucks provide fuel and lubricant deliveries to the facility. Diesel fuel and machine lubricants are the only petroleum products stored on site, and there are no present plans to increase the current fuel, oil, or coolant storage capacity. No hazardous wastes are stored on site.

Proposed Mitigation.

Mitigation Common to Alternatives A, B, and C. Due to the porous nature of the ground on the project site, extra measures must be taken to prevent and effectively mitigate spills of diesel, oil, or coolants. Actions to prevent contaminant release will consist of the following:

- All storage containers will be in a reasonable condition, i.e. no leaks or corrosion. If corrosion of any container is noticed, it will be immediately replaced.

- All storage containers will be elevated on stands to eliminate the possibility of unknown underground discharges. This will aid in the early detection of corrosion or leaks.

- The storage area will consist of two cells. One will contain the large fuel storage tank and the other will contain the smaller storage vessels (lubricants, coolants, and others). Each cell will be fenced with 2' x 2' x 6' concrete *ecology blocks* or *ultrablocks*. The entire cell (including blocks) will be lined with an approved 30 mil PVC liner, which will be blanketed with fine aggregate to provide a wearing surface. The volume of each cell will exceed the volume of the containers within the cell by at least 5 times (i.e., the worst-case leakage volume).

- A small berm will be constructed between these containment cells and any downslope areas. This secondary containment berm will be covered with an approved 30 millimeter PVC liner and also blanketed with fine aggregate.

- The containment area will be inspected periodically. Any tears noticed in the PVC lining will result in repair or replacement.

- Appropriate equipment and containers will be maintained on-site into which soiled ground can be placed for removal to a suitably licensed off-site repository.

On-site servicing of mobile equipment is limited to periodic oil changes, coolant changes, and lubrication. Servicing will take place on a 10' x 15' concrete pad adjacent to the containment area that will be shaped to drain into a sump. Oil is drained into pans and then carefully transferred into a 500 gallon waste oil drum in the containment area.

In the event of a spill on an unlined area, all contaminated ground will be placed in approved containers and hauled to a licensed solid waste depository. If the spill is of large volume or over a large area, soil samples will be tested after clean up and disposal to confirm that all contamination has been removed. In the event of spillage or leakage in the containment cells, an absorbent will

be used to collect the material. This contaminated absorbent will be properly packaged and disposed of at a solid waste depository.

A formal oil spill prevention, control, and countermeasure plan (SPCCP) will be filed after its timely completion. The SPCCP will further detail the above described and other mitigatory measures. As indicated above, total storage capacity of fuel, oil, and coolants is expected to be approximately 1,350 gallons. This would place the facility over the threshold of 1,320 gallons total aboveground storage capacity, and therefore subject to the SPCCP equirements of 40 CFR Part 112. These regulations establish *"¼ procedures, methods, and equipment and other requirements to prevent the discharge of oil from non-transportation related onshore and off-shore facilities into or upon the navigable waters of the United States or adjoining shorelines¼"* These regulations apply to owners and operators of such facilities that engage in *"¼drilling, producing, gathering, storing, processing, refining, transferring, distributing, or consuming oil and oil products¼"* that could reasonably be expected to be discharged in harmful quantities into or upon navigable waters of the U.S. 40 CFR 112.7 identifies specific elements that must be addressed in a SPCCP, including history and handling of prior spills, potential migration routes should a spill occur, descriptions of containment and diversionary structures, construction and integrity of storage tanks, descriptions of security devices and safety measures, and details of personnel training.

Fuel and oil storage and transfer are well below the Substantial Harm Criteria thresholds established by EPA.

8.4 FISHERIES

Anticipated Impacts.

Impacts common to Alternatives A, B, and C. Production operations at present or increased levels are not expected to have a measurable impact on aquatic biota in the Columbia River. Barge loading has historically had negligible impact on residential or anadromous fish population uses. Recent upgrades to the barge load-out facilities have been approved by the U.S. Army Corps of Engineers and the Washington Department of Fish and Wildlife (see Section 2.1: Existing Permits and Agreements in the MRP). Four Tribal fishing sites registered to two Tribal members exist on the Columbia River shoreline adjacent to Avery. Barge operation could periodically affect the use of these sites during the late summer and fall months. Yakama Nation Fisheries Resource Management staff have indicated that barge traffic generally coexists well with tribal gillnet fisheries, although barges do occasionally become entangled with gill nets. Barge company representatives have indicated that they have very positive working relationships with the Tribal members that fish in the vicinity of most barge load-outs they use. Immediate compensation for damaged nets is the rule.

Proposed Mitigation.

Mitigation common to Alternatives A, B, and C. The primary mitigation of potential fisheries impacts is to confine barge use to existing areas. For all alternatives, there are no planned expansions of the present permanent barge loading facility. Barge operators would follow standard procedures to minimize the loss of oil or fuel during material loading and down-river material transport activities. The Coast Guard and/or EPA would be immediately notified by the barge operator should a fuel/oil spill or leak occur at any time during loading or transport. Barge operations will be planned to minimize potential impacts to Yakama tribal fishing, in correlation with tribal members.

8.5 VEGETATION

Anticipated Impacts.

Alternative A. The existing vegetation on 23.5 of 40 acres (Phases IV through VIII) will be removed from V-179 and V-179A as topsoil and overburden is removed in advance of mining. This acreage does not include designated buffer zones along the north, south, and west boundaries.

Alternative B. The existing vegetation on 17 acres, not including designated buffer zones, will be removed from V-179A.

Alternative C. The remaining vegetation on V-179, approximately 6 ½ acres, will be removed.

Proposed Mitigation.

Mitigation Common to Alternatives A, B, and C. As recommended by the Yakama Nation Vegetation Management Program, hydro-seeding will be the preferred method of planting. There are no long-term artificial irrigation systems planned for the site. If necessary, a temporary system will be used to irrigate the area after the seeding process to ensure proper germination and early growth rates. Any required irrigation water would be taken from recycled settling pond water or from the on-site well. Dust control of areas stripped prior to mining is detailed in Section 8.2 – Air Resources. Vegetation will be reclaimed using an approved seed mix recommended by the Yakama Nation Vegetation Management Program for re-vegetation after proposed mining. This option was chosen because of its mixture of native species and stability enhancement. The plan recommends the following seed mix at 65 - 70 pounds per acre:

- Indian Ricegrass *(Nezpar)*.
- Thickspike Wheatgrass *(Critana)*.
- Prairie June Grass added for stability.

Critana is a *sod forming* native grass that performs well on eolian soils (*sand dunes*), and will protect against erosion of topsoil and underlying sandy material.

Several species of noxious weeds, diffuse knapweed and thistle most notably, have been identified in the project area. These species will be regularly controlled to prevent further infestation. Weed growth will be controlled by mechanical cutting and limiting movement of equipment cross-country. Furthermore, the use of hydro-seeding will assist native species in out-competing exotic (noxious) species. Infested areas will be treated by applying herbicides approved by the Yakama Nation Vegetation Management Program. As a stipulation #19 of the BIA Sand and Gravel Permit, a 5-wire perimeter fence will be maintained around the project boundary. Even though there is no present grazing in the project area, this should eliminate potential grazing pressure until these areas have successfully matured. This fence will remain after maturity only if directed by the surface owner.

8.6 WILDLIFE

Anticipated Impacts.

Impacts Common to Alternatives A, B, and C. No significant wildlife impacts are anticipated for this project. Combining these alternatives with proposed mining of V-194 will not cause a cumulative wildlife impact. Parcels V-179/179A are already degraded habitats that are not used by resident large mammals or birds, except possibly as an intermittent corridor to other up- or down-stream areas. Small mammals and reptiles will be temporarily displaced during active mining, but will encroach from surrounding populations following reclamation.

Proposed Mitigation.

Impacts Common to Alternatives A, B, and C. Wildlife mitigation measures will be developed in response to recommendations by the Yakama Indian Nation Wildlife Resource Program (WRP). Mitigation measures suggested by the WRP for V-194 consisted of the installation of Osprey nesting poles. The Yakama Nation employs a policy of off-site in-kind mitigation for wildlife resource habitat. The WRP did not consider V-194 suitable for habitat or wildlife mitigation efforts, and proposed mitigation measures in more suitable forested habitat areas on the Reservation. However, on-site wildlife mitigation measures are not being discounted on V-179 and V-179A pending WRP recommended methods for post-reclamation habitat enhancement.

8.7 THREATENED AND ENDANGERED SPECIES

Anticipated Impacts.

Impacts Common to Alternatives A, B, and C. It is not expected that implementation of any of these alternatives will result in adverse impacts on federally protected threatened, endangered, and/or sensitive species. No protected plant species (threatened, endangered, or sensitive) have been identified for Klickitat County or for the project area. Nine species of salmon and steelhead currently listed as threatened or endangered are known to use the adjacent Columbia River. Production operations and related activities, such as excavation, barging, and groundwater / surface water interaction, are not expected to interfere with the passage of adult or juvenile species. Combining Alternatives A, B, or C with the proposed mining of V-194 should not result in adverse cumulative impacts to threatened, endangered, or sensitive species.

Proposed Mitigation.

Mitigation Common to Alternatives A, B, and C. The proposed expansion of V-179 and V-179A should not result in adverse impacts to threatened or endangered Columbia River salmon or steelhead. Present operations will mitigate future potential impacts by confining barge use to existing areas already approved by the U.S. Army Corps of Engineers and the Washington Department of Fish and Wildlife. Utilization of a single existing barge load-out by expanded operations negates the need to construct further facilities that may cause adverse impacts. There are no current planned expansions of the barge load-out facility.

8.8 CULTURAL AND ARCHAEOLOGICAL RESOURCES

Anticipated Impacts.

Alternative A. Implementation of this alternative would impact the greater vicinity of the Tribal cemeteries beyond the buffer zone in V-179 (see Figure 3 in Appendix I), as well as the recently surveyed area within V-179A. There are indications, however, that protecting this buffer zone and proper monitoring during topsoil removal will eliminate adverse impacts.

Alternative B. Implementation of this alternative would impact the recently surveyed area within V-179A, which would be subject to monitoring during topsoil removal.

Alternative C. Implementation of this alternative would impact areas beyond the cemetery buffer zone in V-179. Impacts should be minimal beyond the buffer zone.

Impacts Common to Alternatives A, B, and C. Implementation of these alternatives are not expected to result in adverse impacts to cultural or archaeological resources. Major distributions of cultural materials are not likely at the site, as indicated by the cultural resource assessment from Archaeological Investigations Northwest performed in December 1999. Based on the proximity of the site to areas of intense and long-term use by native peoples (the cemeteries on V-179 and V-189 and lithic materials on southwest V-194), it is possible that occasional artifacts and burials could be encountered during overburden excavation activities. As long as development stripping activities are properly monitored and managed, and appropriate cemetery buffers are maintained,

production operations when combined with mining activities at V-179 and V-194 should not cause a cumulative impact to cultural and archaeological resources.

Proposed Mitigation.

Mitigation Common to Alternatives A, B, and C. A designee of the Yakama Nation Cultural Resources Program will be available to monitor and survey initial sub-surface excavations during topsoil and overburden stripping. A grader will be used to initially strip the topsoil to the depth and grid required by the Cultural Resources Program. This method was suggested by a U.S. Forest Service archaeologist familiar with incidence of cultural materials in the area. A specialist from the Yakama Nation Cultural Resources Program will be regularly invited to survey and monitor the site throughout the life of the mine. Further recommendations, detailed in the full Archaeological Investigations Northwest report, can be summarized here as:

- A monitoring protocol will be developed prior to the initiation of overburden stripping between PNA, the Yakama Indian Nation, BIA, and BLM defining the scope of the monitoring activity and procedures to be followed should cultural resources or burials be encountered during removal of the overburden.

- The AINW survey was limited to that area indicated by the allottee as the likely portion of the V-179A allotment on which mining would be allowed. Should the boundaries of the mining area be changed to include areas not surveyed by AINW, additional field investigation would be required.

- AINW did not address the potential for traditional use locations (*traditional cultural properties*) at the proposed mining area. Given the proximity of the mining area to known areas of traditional use, PNA will initiate discussions with the Yakama Indian Nation regarding the need and scope for undertaking a study to determine if traditional cultural properties are located within or in the immediate vicinity of the project location.

Should any cultural artifacts or remains, human or otherwise, be inadvertently discovered during the mining operations at the site under any Alternative, the Yakama Nation Cultural Resources Program will be immediately notified and excavation activities that affect the site of such materials will halt until further notification by the Cultural Resources Program. The Yakama Nation would retain full authority and sole ownership and curator rights over any cultural and archaeological discoveries from V-179 and V-179A. Any inadvertent discoveries would be handled in accordance with applicable federal laws, including but not limited to: Native American Grave Protection and Repatriation Act, Archaeological Resources Protection Act of 1979, National Historic Preservation Act of 1966, and the Archaeological and Historic Preservation Act of 1974.

In coordination with a proposed mapping and evaluation of the rock wall within V-194, the extension of this feature into V-179A will be investigated by the Cultural Resources Program or a professional archaeologist prior to mining in that area.

Daniel Hack of Halstead GeoNumerics met with representatives of the Yakama Nation Cultural Resources Program at the project site on June 22, 2000. Mr. Johnson Meninick, Manager of the Cultural Resources Program, and Mr. Chris Landreau, tribal Archaeologist, suggested that the potential burial areas coincident with the marked cemeteries in V-179 and V-189 extend beyond the present fence line. They indicated that the potential burial area could extend from the fenced areas to the north and northwest as far as the present northern access road, and to the northeast as far as the gully in V-189. This area approximates a 300 foot buffer to the west and northwest, extending east from the northern access road up to the northern project boundary (see Figure 3 in Appendix I). Mr. Meninick and Mr. Landreau indicated that protection of this area is critical, pending further archaeological investigations and consultation with Tribal elders in regards to this *traditional cultural place*. They suggested that V-179A mining not extend east of the present northern access road, and that this road be maintained as an access to the cemetery site. Protection of the northeast corner of V-179A, which is within the above described buffer, would alleviate potential problems with erosion caused by adversely impacting the natural hydraulics of the large swale that strikes northwest from the Columbia River, across V-189, and through the northeast corner of V-179A. It was also suggested that representatives of the Cultural Resource Program conduct periodic inspections to ensure that this area remains protected. PNA has approved the implementation of these proposals.

8.9 AGRICULTURE

Anticipated Impacts.

Impacts Common to Alternatives A, B, and C. Implementation of these alternatives will create no impacts to agriculture, because there is no present agricultural activity in the project area. Nearby tracts have been used in the past for cattle grazing, but the nearest active grazing is at least ½ mile to the east. Orchard operations are underway on land approximately ½ mile to the west of V-179/179A between the BNSF railroad right-of-way and SR-14.

Proposed Mitigation.

Mitigation Common to Alternatives A, B, and C. Planned reclamation of the site will render it suitable for grazing, dryland agriculture, irrigated agriculture, or orchards/vineyards. Grazing or minor dryland agriculture is the only use proposed in the MRP at this time. If ongoing discussion with the land owners results in the designation of a more preferred post-mining land use, the MRP and this EA will be appropriately modified.

8.10 EMPLOYMENT

Anticipated Impacts.

Alternative A. The present staffing level of 10 workers on-site during full production should remain on or about that level through the projected 6-½ year life of the mine.

Alternative B. An estimated 10 workers would be employed on-site through the 3 year life of the mine.

Impacts Common to Alternatives A and B. If production at any time is maximized in order to meet increased market requirements, as many as 20 workers could be employed for two shifts. The operations would provide training opportunities for Tribal members and other employees. Employees will work in two 8-hour shifts per day and will park in the area shown in Figure 3 in the MRP.

Alternative C. Only 5 to 8 workers would be employed on site for the 12 to 18 months of final mining and reclamation.

Proposed Mitigation.

Mitigation Common to Alternatives A, B, and C. Employees will work in two 8-hour shifts creating access road traffic four times daily. Employees will use on-site sanitary facilities. All imported wastes, such as domestic garbage, cleaning supplies, etc., as well as sanitary wastes will be hauled off site by a licensed commercial service for disposal.

In cooperation with the Tribal Employment Rights Ordinance (TERO), as well as stipulation #23 of the Sand and Gravel Permit for V-179, PNA agrees to employ Tribal members to the greatest practicable extent in all positions for which they meet the required skills and experience, in order to stimulate and facilitate the employment of Tribal members and to upgrade and improve their skills and employment opportunities.

8.11 INCOME

Anticipated Impacts.

Alternative A. Extraction of sand and gravel has the potential to generate royalty income of from $5 million to $8 million for Tribal members, as well as employment income.

Alternative B. Extraction of sand and gravel has the potential to generate employment income, as well as $2 million to $5 million of royalty income for Tribal members.

Alternative C. Royalty income for Tribal members would be limited because little economic excavation remains.

Impacts Common to Alternatives A, B, and C. The local economy in central Klickitat County, Washington and in northern Wasco and Sherman Counties in Oregon will derive some benefit from employees' and customers' use of the area.

Proposed Mitigation.

Alternative A. Operation plans will be developed to maximize economic benefits for the Yakama Indian Nation and tribal members. This supports the concept of *ultimate maximum recovery*. This Federal land use principle encourages that the maximum economic material be removed from the site prior to abandonment, keeping in consideration safety concerns and local land use.

Alternative B. Due to the *boundary pillar* remaining along the V-179/V-179A property line, the loss in royalties from the un-mined material would potentially total millions of dollars. Resource extraction would have to be maximized within these constraints.

Alternative C. No mitigation can be proposed for this alternative. Little or no royalty income would remain in the present configuration.

8.12 RESOURCE USE PATTERNS

Anticipated Impacts.

Impacts Common to Alternatives A, B, and C. The proposed mining operation is consistent with other local developments in the immediate project area, specifically mining on V-194 and affiliated use of the BNSF railroad mainline, frontage road, and barge loading facility. No other resource use pattern impacts have been identified that would result from the proposed operations. No resources uses are currently made on the degraded affected lands. Alternatives A, B, or C when combined with proposed mining of V-194 is not expected to cause a cumulative impact regarding resource use patterns.

Proposed Mitigation.

Mitigation Common to Alternatives A, B, and C. The site will be reclaimed in phases as mining progresses (see Section 5.1: Land Resources). Once reclamation has been completed, the project area will resemble other undeveloped areas along this section of the north Columbia River shoreline. Mining and reclamation will be coordinated with that on V-194 to assure uniformity in post-mining topography and future potential land use(s).

8.13 NOISE AND LIGHTS

Anticipated Impacts.

Impacts Common to Alternatives A, B, and C. Expanded mining operations are planned for 16 hours per day and six days per week. Noise impact from these operations are not expected to extend beyond the project area/buffer zones surrounding the active pit and the BNSF mainline. No

blasting is planned for mining in V-179 or V-179A. Since the processing plant is expected to stay at its present location on the pit bottom within V-179, noise from these facilities will be 250 feet below the crest of the pit through the completion of mining. Flood lights will be used during night time operations, but will not be visible from adjacent residences. They will only be visible from the BNSF mainline, frontage road, and Interstate 84 across the river. There is the possibility that noise could affect memorial ceremonies at the Tribal Cemetery to the immediate east. When Alternative A, B, or C is combined with proposed operations at V-194 to the west, there could be a cumulative noise and light impact during the life of the two operations.

Proposed Mitigation.

Alternative B. If production operations in the northern extreme of V-179A become problematic to adjacent residents, a berm will be constructed and near-by equipment operation limited to daytime hours. Excavation equipment in operation in the north of V-179A will be turned off or kept at idling speed when not in use to minimize noise.

Mitigation Common to Alternatives A, B, and C. If noise from the processing plant in the pit floor becomes problematic, noise mitigation measures (such as shielding structures) will be initiated. Noise standards will adhere to state and federal standards. During memorial services at the Tribal Cemetery, operations will be temporarily suspended. Lights used during evening hours will be shielded and directed to minimize their effect on drivers using I-84, as well as operating and maintenance crews on the BNSF access road.

8.14 AESTHETICS

Anticipated Impacts.

Alternative B. Mining of V-179A alone would create an excavation north of the Avery Pit separated from the present pit by an unmined boundary pillar along the V-179/V-179A line. These two separate excavations could cause a detrimental aesthetic impact, as they would be difficult to reclaim or blend with adjacent natural topography.

Impacts Common to Alternatives A, B, and C. When combined with proposed operations at V-194 to the west, Alternatives A, B, and C will increase the overall site visibility within the Columbia River Gorge National Scenic Area, the Columbia River, Interstate 84, and the BNSF mainline and frontage road. Operational noise and lights will also influence area aesthetics. The combination of Alternative A, B, or C with proposed operations at V-194 will cause a cumulative aesthetic impact. The current stage of development is not visible from SR 14, but proposed operations at V-194 will be visible. These tracts are exempt from the Columbia River National Scenic Area Act's management plan requirements under the provisions in sections 17(a)(1) and 17(a)(7) of the Act.

Proposed Mitigation.

Alternative B. The negative detrimental impact of mining V-179A alone would be difficult to mitigate. A small excavation (V-179A) separated from a nearby large excavation (the present Avery Pit) would look very unnatural, as well as being difficult to use after reclamation.

Mitigation Common to Alternatives A, B, and C. Measures to mitigate aesthetic impacts for Alternatives A, B, and C will be comprised of mitigation for Land Resources (Section 8.1), Air Resources (Section 8.3), Vegetation (Section 8.5), and Noise and Lights (Section 8.13). These include:

- Dust control through the use of water trucks and rapid re-vegetation of topsoil and overburden stockpiles.
- Construction of drift and silt fences, and/or trenches as need to minimize migration of wind blown material onto adjoining private property and SR-14.
- Noxious weeds control by mechanical cutting, limiting movement of equipment cross-country, and treatment by approved weed killers if required.
- Lights will be shielded and directed to minimize their effect on drivers using the BNSF right-of-way.
- Contouring and regrading final reclamation slopes with on-site topsoil and overburden material, followed by re-vegetation with approved species. Once completed, the project area will resemble other nearby undeveloped areas.

8.15 PUBLIC HEALTH AND SAFETY

Anticipated Impacts..

Impacts Common to Alternatives A, B, and C. Impacts to public health and safety can be defined by determining uses of the project area not affiliated with production operations. Two residences exist within 150 feet of the northern extent of proposed operations and a third approximately 300 feet away, posing an attractive nuisance from the operations. The BNSF mainline is used by railroad employees, PNA employees, and infrequently by fishermen. SR-14 will be several hundred feet north of the ultimate maximum pit. The project area is remote, with only a minimal number of people living within two or more miles. Fire danger within the project site is minimal due to the sparse, low vegetation.

Proposed Mitigation.

Mitigation Common to Alternatives A, B, and C. During mining operations for Alternatives A, B, and C, a fence will be constructed along the boundary of the permit area to mitigate the *attractive nuisance* of persons or animals wandering into the mining area. This fence is also required via BIA permit stipulation #19. Warning signs will be posted around the permit boundary until final reclamation. A 50-foot buffer is proposed for the general perimeter. Gates will remain

locked at all times when not in use. A night watchman is presently stationed near the south end of V-179, and will remain through the life of the mine. Settling ponds will have sloped sides that allow for emergency egress / ingress in case of emergencies. The final reclaimed pit will be sloped at 2:1 with benches every 50 feet that will minimize hazards (see Figure 3 in Appendix I).

Fire extinguishers will be kept on site and in all heavy equipment to aid in controlling the spread of a small fire. Water trucks and mine equipment will be available to help suppress larger local fires. Emergency response numbers and First Aid supplies will be in conspicuous locations, and cellular phone service will be readily available on site. All vehicles on-site will be operated at a safe and prudent speed, with special courtesy paid to residents, users of the boat launch park, or other members of the public. The operator will comply with all other applicable federal, state, and local laws and regulations with regard to fire, health, and safety.

In terms of mitigating impacts to public health, state and federal statutes will be complied with for transporting, storing, and use of any equipment lubricants, fuels, and coolants. Figure 4 in the MRP shows locations for on-site storage of fuel, lubricants, and coolants. The storage area is located away from the majority of operations traffic that could have the potential to damage or disrupt the storage containers. Signs will highlight these critical storage areas. Furthermore, it is on high ground, away from the potential effects of severe stormwater run-off. In the unlikely event of adverse impacts to surface and groundwater as a result of mining or processing operations, the water quality of nearby residences will not be affected because these residences are up-gradient from the project site in terms of both surface water and groundwater. Specific contaminant control measures, including discussion of liners and berms, are detailed in Section 8.3 – Water Resources. On-site servicing of mobile equipment and spill clean-up procedures are also discussed in this section.

For all alternatives evaluated, the proposed operations when combined with proposed mining of V-194, are not expected to have a cumulative impact on public health and safety.

8.16 ENVIRONMENTAL JUSTICE

The assessment of *environmental justice* in NEPA processes was formalized by Executive Order 12898 in 1994, which requires that each federal agency "*¼shall make achieving environmental justice part of its mission by identifying and addressing ¼ disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority and low-income populations¼*". The environmental justice screening is a compilation of data designed to determine if ethnic or low-income populations exist within the geographic area impacted by a federal action. For the proposed operations as described in the MRP, the main considerations in environmental justice screening would be to:

- Determine if disenfranchised populations would be displaced by the proposed actions.
- Identify adverse affects of environment or human health.
- Determine net benefits from the proposed actions.

The *geographic scale* of the impact area is the sparsely populated south central portion of Klickitat County between the towns of Wishram and Dallesport. Employment in this area of the county is reliant on The Dalles, OR, and to a lesser extent Goldendale, WA. Demographic data from the 1990 census was not available for either town in the proposed impact area. The next scale larger than the impact area is Klickitat County as a whole, for which the most recent poverty information available is the 1995 Small Area Income and Poverty Estimates. For 1995, the overall Washington State poverty rate for all age brackets was 11.2%. The Klickitat County rate for the same year was 19.2%, ranking seventh highest out of 39 counties. For comparison, nearby Yakima County had the highest poverty rate at 24.2%. The 1990 census reported the Klickitat County population at 16,616, with 8% not of Caucasian origin.

In the immediate impact area, minority and low income populations exist throughout the communities of Wishram and Dallesport, as well as individual residences and small settlements, such as Cloudville, Rockland, and Wishram Heights, along SR14. There are no residences on land presently proposed for mining, so no one will be displaced by the proposed operations. Resources in the project area that could attract minority or low income populations include employment at the Avery Pit or adjacent mining operations, use of the Avery boat launch park, and attendance of memorial services at the Tribal cemetery. Employment in local mining operations could be an important resource in this sparsely populated district. Use of the boat launch park will not be affected because truck trips through the access road are minimal, as most transport is via barge. Furthermore, most public use of the boat launch park is during the weekend, when haulage from the Avery Pit is very little. Mitigation during memorial services at the Tribal cemetery is discussed in Section 8.13: Noise and Lights, as well as in the MRP. In terms of human health, this Environmental Assessment and affiliated MRP indicate that there will be no impacts beyond the active mining area. Impacts in this immediate area, such as dust and noise, will be adequately mitigated. No other impacts are currently identified. Most of the potential impacts are not disproportionate relative to the general population. The exception to this, however, is use of the Tribal cemetery. Suitable mitigation measures have been proposed for this impact, and further measures will be developed if users of the Tribal cemetery indicate that they are needed.

Net benefits from the proposed action include:

- Royalty payments to Tribal members for the benefit of themselves and their community.
- Contributions to the socio-economic advancement of the Yakama Nation.
- Employment opportunities for Tribal members and low-income residents of nearby communities.
- Reclamation of a long existing gravel pit and marginal adjacent land to a more economically usable and socially beneficial state.

9.1 REVIEW AND CONSULTATION

Integral in the compilation, drafting, and completion of any EA is consultation and coordination with the many stakeholders in the land use process. These stakeholders primarily consist of Tribal and federal agencies. However, it is difficult to draft a comprehensive agency consultation and coordination list until the review process has been completed. The following contact names are based on the consultation and coordination file from the EA for proposed mining of V-194 to the west, which was approved in January 2000.

9.1.1 PROPOSED AGENCIES AND ORGANIZATIONS TO BE CONSULTED

The following organizations/agencies will likely be consulted with, and/or provided input for developing this EA. Potential contact names are in parentheses.

STATE AND LOCAL GOVERNMENTS

Washington Natural Heritage Program (Sandy Swope Moody, Environmental Coordinator)

FEDERAL AGENCIES

Bureau of Indian Affairs, Yakama Agency
Environmental Coordinator, Natural Resources Section (Jim Durglo)
Natural Resources Officer (Terry Berkompas)
Range Management (Paul Rembold)
Soil Scientist (Steve Wangemann)

Bureau of Land Management
Spokane District Office (Kelly Courtright, Mining Engineer)
Wenatchee Field Office (Brent Cunderla, Area Geologist)
Oregon State Office (Eric Hoffman, Branch of Physical Sciences)
Oregon State Office (Denny Seymour, Branch of Physical Sciences)

U.S. Army Corps of Engineers
Regulatory Branch (Debbie Knaub)
Realty Office (Miles Takayesu)

National Marine Fisheries Service
Denis Carlson
Stephen Landino, Branch Chief
Gorden Zillges

TRIBAL GOVERNMENTS

Yakama Nation
Forestry / Cultural Resources (Tim Batin)
Wildlife Resource Management (William Bradley, Manager)
Water Resources Program (Yvonne Colfax, Water Technician)
Environmental Restoration and Waste Management Program (Barbara Harper)
Fisheries Resource Program (Lynn Hatcher, Manager)
Cultural Resources Program (Chris Landreau, Archaeologist)
Environmental Protection Program (Karen Lucei)
Cultural Resources (Johnson Meninick, Manager)
Natural Resources (Carroll Palmer, Deputy Director)
Realty Estate (Rhoda Strom, Realty Officer)
Fisheries Resource Management Program (Steven Parker, Harvest Manager)
Water Resources Program (Robert Pimms, Director)
Water Resources Program (Tom Ring, Hydrogeologist)
Water Resources Program (Gina Ringer, Water Technician)
Vegetation Management Program (Tony Spencer, Manager)
Irrigation and Lands Committee (Harris Teo, Jr., Chairman)
Wildlife Resource Management (Bill White, Archaeologist)
GIS, Forestry Office (Ray Wiseman, Manger)

9.2 PRIVATE SECTOR PREPARERS

Daniel Hack, Halstead GeoNumerics

10.0
SUMMARY

Extraction of aggregate material from a gravel deposit within Klickitat County, Washington has been proposed. This operation will supply aggregate products to local and regional markets. Four alternatives have been evaluated. The first alternative, the preferred alternative, involves expansion of the existing Avery Pit (V-179) into a 21-acre tract to the north (V-179A). The second alternative involves mining of V-179A alone. The third alternative, the no action alternative, involves mining V-179 to depletion and reclaiming. The fourth alternative involves mining from other sources. The first alternative was selected because of ultimate maximum recovery, as well as for practicality and suitability of reclamation and aesthetics. Overall environmental impacts from proposed operations, even in combination with proposed mining to the immediate west, will be minimal. Impacts to land resources, water resources, air quality, and public health and safety can be easily mitigated. In terms of impacts to fisheries and wildlife, there is even potential for habitat enhancement. Applying these mitigation principles during mining and reclamation operations, economic sand and gravel extraction is a beneficial interim land use in consideration of present activities in the project area.

CH2M Hill, 2000, Environmental Assessment for Development of V-194 (Eagle Point Gravel Pit) Gravel Mining Operation, CH2M Hill Richland WA office, 23 pp

Halstead GeoNumerics, 2000, Mining and Reclamation Plan, BIA Leases #3-2-0087-9924 & 3-2-0066-9909, Avery Sand and Gravel Pit, Klickitat County, Washington, 44 pp

Kolling, P.W., 1979, Environmental Assessment: Avery Pit, U.S. Geological Survey EA#7917-I-1PNA, Office of the district mining supervisor, Portland OR, 29 pp

Kreft, D.L., 1998, advance copy portions of the "Soil Survey of Klickitat County, Washington", obtained from David L. Kreft, District Conservationist: Goldendale WA office of the U.S. Department of Agriculture Natural Resources Conservation Service

U.S. Department of Interior Bureau of Land Management, 1988, National Environmental Policy Handbook (H-1790-1), Release 1-1547, 10/25/88, 61 pp w/ appendices

U.S. Department of Interior Bureau of Land Management, 1999, Environmental Justice Screening in NEPA, Analysis for Oregon, Washington, and Northern California, BLM Oregon/Washington State Office, Portland OR, 17 pp

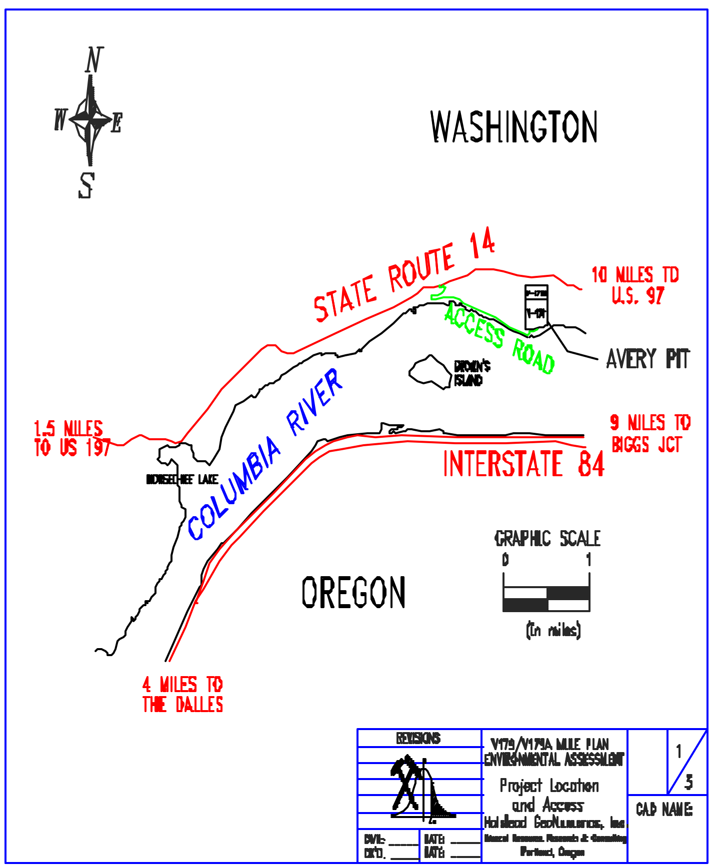
N
W
E
S
WASHINGTON
STATE ROUTE 14
10 MILES TO U.S. 97
ACCESS ROAD
AVERY PIT
COLUMBIA RIVER
1.5 MILES TO US 197
9 MILES TO BIGGS JCT
INTERSTATE 84
GRAPHIC SCALE
0
1
(in miles)
OREGON
4 MILES TO THE DALLES
REVISIONS
V179/V179A MULE PLAN ENVIRONMENTAL ASSESSMENT
Project Location and Access
1
3
CAD NAME:

Figure 1

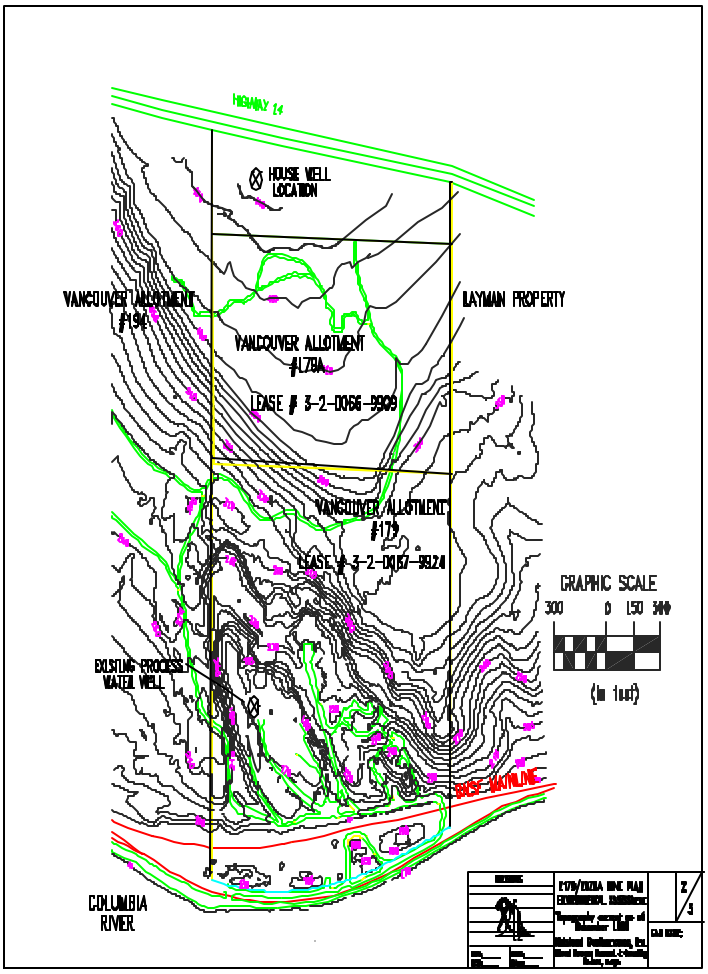
HIGHWAY 14
HOUSE WELL LOCATION
VANCOUVER ALLOTMENT #194
LAYMAN PROPERTY
VANCOUVER ALLOTMENT #179A
LEASE # 3-2-0066-9909
VANCOUVER ALLOTMENT #179
LEASE # 3-2-0067-99124
GRAPHIC SCALE
300 0 150 300
(In Feet)
EXISTING PROCESS WATER WELL
BASE MAINLINE
COLUMBIA RIVER

Figure 2

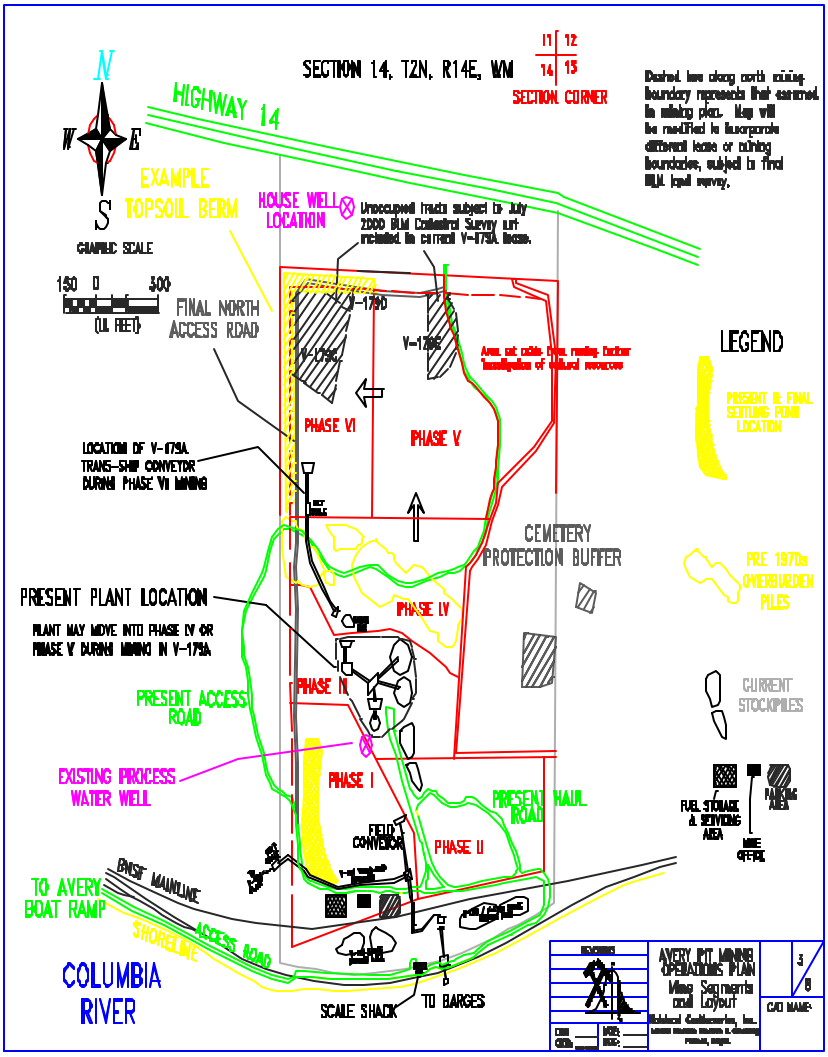
N
W
E
S
SECTION 14, T2N, R14E, WM
11 12
14 15
SECTION CORNER
HIGHWAY 14
EXAMPLE
TOPSOIL BERM
HOUSE WELL LOCATION
GRAPHIC SCALE
150 0 300
(IN FEET)
FINAL NORTH ACCESS ROAD
V-179D
V-179C
V-179B
PHASE VI
PHASE V
LOCATION OF V-179A TRANS-SHIP CONVEYOR DURING PHASE VI MINING
CEMETERY PROTECTION BUFFER
PRESENT PLANT LOCATION
PLANT MAY MOVE INTO PHASE IV OR PHASE V DURING MINING IN V-179A
PHASE IV
PRESENT ACCESS ROAD
PHASE III
EXISTING PROCESS WATER WELL
PHASE I
PRESENT HAUL ROAD
FIELD 1 CONVEYOR
PHASE II
BNSF MAINLINE
TO AVERY BOAT RAMP
SHORELINE ACCESS ROAD
COLUMBIA RIVER
SCALE SHACK
TO BARGES
LEGEND
PRESENT & FINAL SETTLING POND LOCATION
PRE 1970s OVERBURDEN PILES
CURRENT STOCKPILES
FUEL STORAGE & SERVICING AREA
PARKING AREA
MINE OFFICE
AVERY POT MANNER OPERATIONS PLAN
Mine Segments and Layout
3
8

Figure 3